



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/755,398	01/04/2001	Joel S. Bader	15966-632 (CURA-132)	5250

30623 7590 06/17/2003

MINTZ, LEVIN, COHN, FERRIS, GLOVSKY
AND POPEO, P.C.
ONE FINANCIAL CENTER
BOSTON, MA 02111

EXAMINER

SIEW, JEFFREY

ART UNIT	PAPER NUMBER
----------	--------------

1637

DATE MAILED: 06/17/2003

15

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/755,398

Applicant(s)

BADER ET AL.

Examiner

Jeffrey Siew

Art Unit

1637

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 28 April 2003.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-15 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-15 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 04 January 2001 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☒ The proposed drawing correction filed on 19 September 2002 is: a) ☒ approved b) ☐ disapproved by the Examiner.
If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
* See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☒ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☐ Notice of References Cited (PTO-892) 4) ☐ Interview Summary (PTO-413) Paper No(s). _____
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948) 5) ☐ Notice of Informal Patent Application (PTO-152)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____ 6) ☐ Other:

DETAILED ACTION

Request for Continued Examination

1. The request filed on 4/28/03 for a Request for Continued Examination (RCE) under 37 CFR 114 is acceptable. An action on the RCE follows. The pending claims to be examined are claims 1-15.

Drawings

2. The proposed drawing correction filed on 9/19/02 have been accepted.

Claim Rejections - 35 USC § 112

3. The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

Claims 1-10 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention. The length limitation of up to five nucleotides in length does not have proper support in the specification. On page 12 line 13-15 the specification refers to a range of 4 to 8 but not a range of up to five nucleotides which would fall outside a range of 4 to 8.

Art Unit: 1637

The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Claims 1-15 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

A) The term "without sequencing" in claims 1 & 11 render claims 1-15 indefinite because the term sequencing would appear contradictory to the preamble of the claims in which the nucleic acid sequences are identified.

B) The term "first signals suggest that the nucleic acids are of a specific sequence" renders claims 1-10 unclear. It is unclear as to whether signals would mean the nucleic acids are of a specific sequence or not. It is unclear the metes and bounds of the term.

Claim Rejections - 35 USC § 102

4. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 11 are rejected under 35 U.S.C. 102(b) as being anticipated by Rothberg et al (WO 97/15690 May 1, 1997).

Rothberg et al in WO 97/15690 teach a method for identifying, classifying, or quantifying nucleic acids in a sample without sequencing by utilizing restriction endonucleases (see whole document especially page 8, lines 17-37). They teach probing the sample with a recognition means (page 14, lines 25-29). They teach generating signals arising from a nucleic acid in the sample representing the length and the identities of the target subsequences (page 14, lines 29-37). They teach choosing targeted nucleic acids (page 15, lines 1-13). They teach extending the target sequences with a DNA polymerase in order to generate another signal that has the same length and the same identity as the target subsequence (page 16, lines 19-37). They teach determining a match between the generated signal and known nucleotide sequences from a nucleotide sequence database comprised of sequences that have the same length and the same target subsequence as the generated signal (page 15, lines 1-14). They teach a sequence from the database that matches the generated signal in length and target subsequence (page 15, lines 14-28). They teach recovering a nucleic acid fragment and obtaining its sequence (page 17, lines 17-27). They teach the plurality of nucleic acids are DNA (page 16, lines 5-8). They also teach a probing step that comprises of digesting with a restriction endonuclease that produce

Art Unit: 1637

overhangs, hybridizing double-stranded adapter DNA molecules to the overhang produced by the restriction endonuclease, and ligating the adapter DNA molecules to the fragments to produce ligated fragments (page 16, lines 17-34). They teach the plurality of nucleic acids are RNA (page 16, lines 10-12). They teach a method of extending the sequence in a sample by utilizing restriction endonucleases (see whole document especially page 16, lines 17-37). They teach probing the sample with a recognition means (page 14, lines 25-29). They teach generating signals arising from a nucleic acid in the sample representing the length and the identities of the target subsequences (page 14, lines 29-37). They teach choosing targeted nucleic acids (page 15, lines 1-13). They teach extending the target sequences with a DNA polymerase in order to generate another signal that has the same length and the same identity as the target subsequence (page 16, lines 19-37).

The response filed 4/18/02 regarding the 102 and 103 rejections has been fully considered and deemed not persuasive in part. The response has amended claims to recite ...phasing reactions wherein 4 parallel reactions are simultaneously run, and in each of the 4 parallel reactions a different nucleotide is added to one or more targeted subsequence in an amount up to five nucleotide in lengths. However, claim 11 has not incorporated such language. The 102 and 103 rejections over the primary reference of Rothberg are maintained over claims 11-15.

Claim Rejections - 35 USC § 103

5. The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.

Art Unit: 1637

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

Claims 1-10 & 12-15 are rejected under 35 U.S.C. 103(a) as being unpatentable over Rothberg et al (WO 97/15690 May 1, 1997) in view of Rothberg et al (WO 99/07896 February 19, 1999).

The teachings of Rothberg (WO97/15690) are stated previously.

Rothberg et al do not teach negative and positive oligocompetition signals. They do not teach unlabeled primer.

Rothberg et al (WO 99/07896) teach an oligo-poisoning signal (see whole document esp. page 27 lines 1-32). They teach unlabeled "poisoning" primer (page 22, lines 10-24). They teach an advantage of "poisoning" primer is to provide increased discrimination and resolution (see page 7 lines 26-27). Rothberg et al do teach phasing primers in which the next possible nucleotides are determined (see page 16 lines 13-15). They also teach that additional 4bps is sufficient for uniquely determining the sequence (see page 26 lines 1-5).

One of ordinary skill in the art at the time the invention was made would have been motivated to apply Rothberg's oligo-poisoning to Rothberg's method of determining and classifying sequences in order to perform high specific quantitative determination of the

Art Unit: 1637

components of a cDNA mixture prepared from a tissue sample in a rapid, economical and reproducible manner (page 6, lines 1-20). It would have been *prima facie* obvious to apply Rothberg oligo-poisoning to Rothberg's classifying method in order to accurately and efficiently confirm putatively identified sequence of nucleic acid fragment in a sample.

Moreover, as it was well known that the four possible nucleotides in a sequence were A,G,T,C, it would have been *prima facie* obvious to apply Rothberg et al's phasing primers in four separate reactions to determine the next nucleotide in the sequence.

SUMMARY

6. No claims allowed.

CONCLUSION

7. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Jeffrey Siew whose telephone number is (703) 305-3886 and whose e-mail address is Jeffrey.Siew@uspto.gov. However, the office cannot guarantee security through the e-mail system nor should official papers be transmitted through this route. The examiner is on flex-time schedule and can best be reached on weekdays from 6:30 a.m. to 3 p.m. If attempts to reach the examiner are unsuccessful, the examiner's supervisor, Gary Benzion, can be reached on (703)-308-1119.

Art Unit: 1637

Any inquiry of a general nature, matching or filed papers or relating to the status of this application or proceeding should be directed to the Tracey Johnson for Art Unit 1637 whose telephone number is (703)-305-2982.

Papers related to this application may be submitted to Group 1600 by facsimile transmission. Papers should be faxed to Group 1600 via the PTO Fax Center located in Crystal Mall 1. The faxing of such papers must conform with the notice published in the Official Gazette, 1096 OG 30 (November 15, 1989). The CM1 Center numbers for Group 1600 are Voice (703) 308-3290 and Before Final FAX (703) 872-9306 or After Final FAX (703) 30872-9307.


JEFFREY SIEW
PRIMARY EXAMINER

June 10, 2003